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(71) Applicant: 000003193
TOPPAN PRINTING CO., LTD.
5-1, Taito-1 chome, Taito-ku, Tokyo
(72) Inventor: Minoru NAGAE
c/o TOPPAN PRINTING CO., LTD.
5-1, Taito-1 chome, Taito-ku, Tokyo

(54) [Title of the Invention]: HEAT INSULATING CUP MADE OF PAPER AND
METHOD FOR MANUFACTURING THE SAME

(57) ABSTRACT

[Problem to be Solved by the Invention]

To provide an insulated paper cup that has high manufacturing efficiency and an adhesive property, and is composed of a paper cup main body of desired quality and a cylindrical paper body, and a production method thereof.

[Means for Solving the Problem]

A torso member, which forms a main portion 11 of a paper cup main body, is made from a polyolefinic resin coated paper having a polyolefinic resin film applied to both inside and outside surfaces 2 and 3 thereof, an outer surface of the barrel portion directly below a rim portion 13 of the paper cup main body barrel portion 11 is adhesively fixed to an outer surface of a cylindrical paper body inner curl portion 21 of via a heat seal varnish 5.

CLAIMS

[What is claimed is]:

[Claim 1] An insulated paper cup including a paper cup main body that is composed of a barrel portion and a base portion, and has a rim portion at which an opening edge has been curled outwardly, and a cylindrical paper body in which an inner curl portion is formed that has been curled inwardly at an upper edge to inlay at an outer side of the barrel portion of the paper cup main body, and having an insulation space layer formed between the barrel portion of the paper cup main body and the cylindrical paper body, wherein:

a torso member forming the barrel portion of the paper cup main body comprises a polyolefinic resin coated paper to which a polyolefinic resin film has been applied to both inside and outside surfaces thereof; and

an outer surface of the barrel portion directly below the rim portion of the barrel portion of the paper cup main body is adhesively fixed to an outer surface of a cylindrical paper body inner curl portion via a heat seal varnish.

[Claim 2] A method for producing the insulated paper cup according to claim 1, the method comprising:

a paper cup molding step of manufacturing the paper cup main body;

an inner curl portion forming step of processing a cylindrical paper body blank into a sleeve shape, and forming an inner curl portion that curves inwardly at an upper edge of the sleeve;

a heat seal varnish application step of applying a heat seal varnish to an outer periphery of the barrel portion directly below the rim portion of the paper cup main body;

a hot air blowing step of heating the heat seal varnish applied portion by way of hot air, and thermally melting the polyolefinic resin film; and

an insertion bonding step of inserting the paper cup main body into the cylindrical paper body, and adhesively fixing the outer surface of the barrel portion of the paper cup main body with the outer surface of the inner curl portion of the cylindrical paper body by thermal fusion bonding.

[DETAILED DESCRIPTION OF THE INVENTION]

[0001]

[TECHNICAL FIELD] The present invention relates to an insulated cup of paper that contains instant noodles or the like, and particularly relates to an insulated cup of paper for so-called instant food products and instant beverages that can be eaten or drank in their present state by adding boiling water thereto.

[0002]

[BACKGROUND ART]

As an insulated paper cup in which boiling water can be added to a contained substance such as instant noodles to eat, there are insulated paper cups in which an inner curl portion is formed by curling an upper portion of a cylindrical paper body to an inside thereof, and creating an insulated space layer between the cylindrical paper body and a paper cup main body barrel portion.

[0003]

In this case, a method that causes bonding via an emulsion-type adhesive, a method that causes bonding by covering a location where a polyolefinic resin layer on an outer surface of the paper cup main body barrel portion has been melted with a cylindrical paper body, and the like have been considered as bonding methods of the paper cup main body and the

cylindrical paper body in order for the paper cup main body to be integrated therewith by covering with the cylindrical paper body.

[0004]

However, there are problems such as the former method having a slow manufacturing speed since time is consumed for drying the emulsion-type adhesive or, since a lot of adhesive is necessary in order to bond the paper cup main body to the cylindrical paper body, the adhesive being forced out from a bonding portion thereof.

[0005]

In addition, in the later method, a coated board layer or a printed display layer providing printing thereon makes an outer surface of the cylindrical paper body, this surface and the polyolefinic resin layer of the paper cup main body barrel portion are made to be bonded, and the coated board layer or printed display layer and the polyolefinic resin layer are made to be bonded, whereby it is difficult to obtain bonding stability.

[0006]

[Problems to Be Solved by the Invention] The present invention has an object to provide an insulated paper cup that has high manufacturing efficiency and an adhesive property, and is composed of a paper cup main body and a cylindrical paper body of desired quality, and was conceived by focusing on the above types of problems related to insulated paper cups in which an insulated space layer is provided between a cylindrical paper body and a paper cup main body by covering the paper cup main body with the cylindrical paper body.

[0007]

[Means for Solving the Problems and Their Effects] According to a first aspect of the present invention, an insulated paper cup includes a paper cup main body that is composed of a barrel portion and a base portion, and has a rim portion at which an opening edge has been curled outwardly, and a cylindrical paper body in which an inner curl portion is formed that has been curled inwardly at an upper edge to inlay at an outer side of the barrel portion of the paper cup main body, and has an insulation space layer formed between the barrel portion of the paper cup main body and the cylindrical paper body, in which: a torso member forming the barrel portion of the paper cup main body is made from a polyolefinic resin coated paper to which a polyolefinic resin film has been applied to both inside

and outside surfaces thereof; and an outer surface of the barrel portion directly below the rim portion of the barrel portion of the paper cup main body is adhesively fixed to an outer surface of a cylindrical paper body inner curl portion via a heat seal varnish.

[0008]

In this way, since an outer surface of the barrel portion directly below the rim of the paper cup main body barrel portion and an outer surface of the cylindrical paper body are adhesively fixed via the heat seal varnish, manufacturing efficiency is superior in that a separate drying step is not made necessary, and also there is no forcing out of adhesive from bonding portions.

In addition, since a coated board layer or a printed display layer providing printing thereon does not contact or bond to the polyolefin resin film, stable bonding becomes possible, even if there is a coated board layer or printed display layer.

[0009]

It should be noted that, the heat seal varnish may also be applied to suitable locations of the paper cut main body barrel portion, may be applied to appropriate locations of the inner curl portion of the cylindrical paper body, or may be applied to both the paper cup main body barrel portion and the inner curl portion of the cylindrical paper body.

[0010]

In addition, according to a second aspect of the present invention, a method for producing the insulated paper cup according to the first aspect includes: a paper cup molding step of manufacturing the paper cup main body; an inner curl portion forming step of processing a cylindrical paper body blank into a sleeve shape, and forming an inner curl portion that curves inwardly at an upper edge of the sleeve; a heat seal varnish application step of applying a heat seal varnish to an outer periphery of the barrel portion directly below the rim portion of the paper cup main body;

a hot air blowing step of heating the heat seal varnish applied portion by way of hot air, and thermally melting the polyolefinic resin film; and an insertion bonding step of inserting the paper cup main body into the cylindrical paper body, and adhesively fixing the outer surface of the barrel portion of the paper cup main body with the outer surface of

the inner curl portion of the cylindrical paper body by thermal fusion bonding.

[0011]

A cup that has good appearance and good quality and excels in insulation properties can be made by following each of the above steps to manufacture an insulated paper cup.

It should be noted that, in the abovementioned inner curl portion forming step in which an inner curl portion that curves inwardly at an upper edge of the cylindrical paper body is formed, it is possible to further raise the insulation property by providing a curved portion forming step in which a curved portion that curves inside at a lower edge of the cylindrical paper body is formed at the same time or in a separate step.

[0012]

[Embodiments of the Invention] The present invention is described in detail by way of the below embodiments.

As shown in FIG. 1 for example, the insulated paper cup of the present invention is made from a barrel portion 11 and a base portion 12, and is configured with a paper cup main body 10 having a rim portion 13 in which an opening portion edge has been curled outwardly and a cylindrical paper body 20 having an inner curl portion 21 in which an upper edge has been curled inwardly, in which the cylindrical paper body 20 is inlaid at an outer side of a barrel portion of the paper cup main body 10, thereby forming an insulating space layer 30 between the paper cup main body barrel portion and the cylindrical paper body.

[0013]

For the paper cup main body 10, a torso member forming a barrel portion 11 and a base member forming a base portion 12 can be manufactured by setting coated paper, to which approximate 10 to 50 μm of a polyolefinic resin such as polypropylene resin and low density polyethylene resin is applied to one surface or both surfaces of a cup base paper having a basis weight of approximately 170 to 400 g/m^2 , into a general paper cup molding machine.

Here, an important aspect of this invention is that coated paper to which a polyolefinic resin has been applied to both inside and outside surfaces is utilized for the torso member forming the barrel portion.

[0014]

The rim portion 13, although not illustrated, may be made as a flat rim that has been compressed in the vertical direction.

[0015]

For the cylindrical paper body 20, first, coated board, white liner, or a paper board of a cup base paper or the like having a basis weight of approximately 190 to 420 g/m² as a raw material is punched out into a substantial fan-shape of predetermined dimensions for a size that covers the barrel portion of the paper cup main body to manufacture a cylindrical paper body blank.

[0016]

Then, both ends of the cylindrical paper body blank are superimposed, for example, and bonded with an emulsion-type adhesive of ethylene and acetic acid vinyl resin type to process into a cylindrical shape. Alternatively, processing into a cylindrical shape may be performed by applying low density polyethylene resin to the back face of the cylindrical paper body and bonding with heat.

[0017]

An inner curl portion 21 in which a top edge of a cylindrical body has been curled inwardly is formed by pressing and/or heat pressing the cylindrical body processed into a cylindrical shape using an incurd die. In this case, a curved portion 22 in which a lower edge of the cylindrical body is curved internally may be formed by pressing or heat pressing using a reducing die, at the same time or in a separate step.

[0018]

Inlaying the paper cup main body 10 of the cylindrical body 20 is performed in the following way, for example.

First, when the cylindrical paper body is inlayed, a heat seal varnish is applied at a circumferential vicinity of a location, directly under a rim portion of the barrel portion of the paper cup main body, at which an outer surface of the barrel portion of the paper cup main body contacts an outer surface of the inner curl portion of the cylindrical paper body, thereby forming a heat seal varnish layer 5.

[0019]

For the application method, a publically known method may be employed that sprays the heat seal varnish using a nozzle, transfers heat seal varnish by a roller, prints heat seal varnish to a corresponding portion

of the barrel portion in advance, etc.

[0020]

It should be noted that, when covering the paper cup main body with the cylindrical paper body, the heat seal varnish layer 5 may also be formed at a location, on the cylindrical paper body, that contacts the barrel portion of the paper cup main body of the inner curl portion.

In this case, the heat seal varnish may or may not be applied as mentioned above to the barrel portion of the paper cup main body.

That is, it may be applied to either one.

[0021]

Then, the polyolefinic resin film on the surface is melted by heating a heat seal varnish layer applied portion.

For the heating method, a publically known method may be employed that blows hot air, performs induction heating, performs radiation heating, or the like.

It is possible to melt the polyolefinic resin film on the surface simultaneously with drying the solvent contained in the varnish by heating immediately after the heat seal varnish is applied.

[0022]

While the polyolefinic resin film on the periphery directly below the rim of the barrel portion of the paper cup main body is melted, the paper cup main body is inserted from the bottom thereof into the cylindrical paper body, the inside surface of the inner curl portion 21 of the cylindrical paper body is fixed by contact to the melted polyolefinic resin film by applying heat seal varnish directly below the rim of the paper cup main body, and the inner surface of the inner curl portion of the cylindrical paper body and the melted polyolefinic resin film of the barrel portion of the paper cup main body are adhesively fixed via the heat seal layer 5 (see FIG. 2).

In addition, adhesively fixing may be similarly performed for bonding the cylindrical paper body and a base portion of the paper cup main body as well, by melting a polyolefinic resin film using hot air.

In this case, it is of no concern whether a heat seal varnish layer is or is not provided.

According to this, an insulation space layer 30 can be established between a paper cup main body 11 and cylindrical paper body 20

[0023]

EXAMPLES

Examples of the present invention are described in more detail below.

Example 1

First prepared were polyethylene coated paper in which a low density polyethylene resin 2 had been applied in a thickness of 15 μm on a top surface of cup base paper 1 having a basis weight of 220 g/m^2 and a low density polyethylene resin 3 had been applied in a thickness of 25 μm to a back surface thereof, as a torso member forming a barrel portion, and polyethylene coated paper in which low density polyethylene resin had been applied in a thickness of 30 μm to one surface of cup base paper having a basis weight of 200 g/m^2 , as a base member forming a base portion, and then a paper cup main body 10 having an inside made of polyethylene (thickness of 25 μm , 30 μm), height of 105 mm, opening diameter of 140 mm, base diameter of 102 mm, rim portion height of 5 mm, rim portion width of 5 mm, and taper angle of 7.5° was formed therefrom using a general paper cup molding machine.

[0024]

Separately, a cylindrical paper body blank of a fan-shape having predetermined dimensions was manufactured using a coated board 4 having a basis weight of 270 g/m^2 , and then molded into a cylindrical shape by superimposing both edges of this cylindrical blank of fan-shape, and bonding thereof with an emulsion-type adhesive of ethylene and acetic acid vinyl resin type.

[0025]

Then, an inner curl portion 21 with a thickness (width) of 1.5 mm was formed in which a top end edge had been curled inwardly by heat pressing the cylindrical blank molded into a cylindrical shape using an incurl die.

In addition, a lower portion of the cylindrical blank molded into a cylindrical shape was formed into the curved portion 22 having a maximum reduction depth of 2.5 mm using a reducing die, thereby making the cylindrical paper body 20.

[0026]

A heat seal varnish applied layer 5 having a width of approximately 5 mm was formed, by a spray method using a nozzle, over an entire

circumference below the rim portion on the outside of the barrel portion of the paper cup main body before molding.

The heat seal varnish used was of solvent type containing polyolefinic resin as a main component.

[0027]

The low density polyethylene layer on the top surface was melted by respectively blowing hot air onto the vicinity of the rim portion on which the heat seal varnish applied layer 5 of the paper cup main body torso had been provided and a lower edge portion of the paper cup main body barrel portion.

[0028]

Finally, the above paper cup main body was inserted from the bottom thereof into the cylindrical paper body that had been manufactured separately, an upper edge of the cylindrical paper body was adhesively fixed below the rim portion of the paper cup main body with the heat seal varnish layer 5, and the lower edge of the cylindrical paper body is fixed by contact to a lower portion of the paper cup barrel portion, thereby making the insulated paper cup of example 1, which includes an insulation space layer 30 between the cylindrical paper body and the paper cup main body barrel portion (see FIGS. 1 and 2).

[0029]

Example 2

The insulated paper cup of example 2 was manufactured using materials and a method similar to example 1, and by covering the barrel portion of the paper cup main body with the cylindrical paper body, except for the heat seal varnish layer having a width of approximately 5 mm being provided by a method of spraying from a nozzle onto a location on the inner curl portion of the cylindrical paper body that contacts the outer side of the barrel portion of the paper cup main body.

[0030]

Example 3

The insulated paper cup of example 3 was manufactured using materials and a method similar to example 2, and by covering the barrel portion of the paper cup main body with the cylindrical paper body, except for the heat seal varnish applied layer not being provided at a location on the outer side of the barrel portion of the paper cup main body that contacts

the inner curl portion of the cylindrical paper body.

[0031]

Comparative Example 1

An insulated paper cup was manufactured using materials and a method similar to example 1, and by covering the barrel portion of the paper cup main body with the cylindrical paper body, except for the heat seal varnish applied layer not being provided at a location on the barrel portion of the paper cup main body that contacts the inner curl portion of the cylindrical paper body, thereby making the insulated paper cup of comparative example 1.

[0032]

Comparative Example 2

First prepared were polyethylene coated paper in which a low density polyethylene resin had been applied in a thickness of 25 μm to one surface of cup base paper, in a torso member forming a barrel portion, having a basis weight of 220 g/m^2 , and polyethylene coated paper in which low density polyethylene resin had been applied in a thickness of 30 μm to one surface of cup base paper having a basis weight of 200 g/m^2 , as a base member forming a base portion, respectively, and then a paper cup main body having an inside made of polyethylene was formed therefrom with the same method as example 1, using a general paper cup molding machine.

[0033]

Except for this cup main body having been used, an insulated paper cup was manufactured that uses the same cylindrical paper body as example 1 by covering the barrel portion of the paper cup main body with the cylindrical paper body with a method similar to example 1, thereby making the insulated paper cup of comparative example 2.

[0034]

Comparative Example 3

Except for the paper cup main body used in comparative example 2 having been used, an insulated paper cup was manufactured that uses the same cylindrical paper body as example 1 by providing a heat seal varnish layer onto the paper cup main body similarly to example 2, and covering the barrel portion of the paper cup main body with the cylindrical paper body, thereby making the insulated paper cup of comparative example 3.

[0035]

Comparative Example 4

Except for the paper cup main body used in comparative example 2 having been used, an insulated paper cup was manufactured using materials and a method similar to example 3, thereby making the insulated paper cup of comparative example 4.

[0036]

Comparative Example 5

Except for the paper cup main body used in comparative example 2 having been used, an insulated paper cup was manufactured using materials and a method similar to comparative example 1, thereby making the insulated paper cup of comparative example 5.

[0037]

The adhesive properties of the outer surface of the barrel portion directly below the rim portion of the paper cup main body barrel portion with the outer surface of the cylindrical paper body inner curl portion were observed and evaluated by the method described below for a total of 8 types, 3 types from the examples and 5 types from the comparative examples, of insulated paper cups manufactured in this manner.

The results thereof are shown in Table 1.

Evaluation method of adhesive properties between the paper cup main body barrel portion and the cylindrical paper body inner curl portion: a final production insulated paper cup is crushed, and then a degree to which the barrel portion and inner curl portion remain bonded on the circumference is ascertained by visual observation.

A: Contacting portion of the paper cup main body barrel portion and the cylindrical paper body inner curl portion are completely bonded (entire portion in the circumferential direction is completely bonded).

B: Contacting portion of the paper cup main body barrel portion and the cylindrical paper body inner curl portion has a portion that is partially unbonded.

C: Contacting portion of the paper cup main body barrel portion and the cylindrical paper body inner curl portion are completely unbonded.

[0038]

Table 1

	Adhesive properties between the barrel portion and the inner curl portion
Example 1	○
Example 2	○
Example 3	○
Comparative Example 1	△
Comparative Example 2	△~×
Comparative Example 3	△
Comparative Example 4	△~×
Comparative Example 5	×

[0039]

From the results in Table 1, it is understood that an insulated paper cup, which has a barrel portion of the paper cup main body and an inner curl portion of the cylindrical paper body thereof completely bonded, can be manufactured by employing, for a torso member forming a barrel portion of a paper cup main body, polyolefin coated paper to which a polyolefinic resin film has been applied to both inside and outside surfaces, melting the polyolefinic resin film on a contacting surface of the inner curl portion of the paper cup main body barrel portion by

heating, and forming a heat seal varnish layer on both or either one of the paper cup main body barrel portion or the inner curl portion of the cylindrical paper body.

[0040]

[Effects of the Invention] According to the present invention as described above, adhesion between the paper cup main body and the cylindrical paper body is better, and torsional strength (rip strength) of the cup is improved.

In addition, the strength can be maintained even when using paper of low basis weight.

Even if there is a coated layer on the top surface of the cylindrical paper body, decorative printing is possible since the paper cup main body can be sufficiently bonded thereto.

Production speed is increased compared to a case of employing a conventional emulsion-type adhesive.

[Brief Description of the Drawings]

FIG. 1 is a partial cross-sectional illustration showing an embodiment of an insulated paper cup according to the present invention; and FIG. 2 is a magnified cross-sectional illustration of an area A of FIG. 1.

[Description of Reference Symbols]

- 1 cup base paper
- 2 top surface, low density polyethylene with thickness of 15 μm
- 3 back surface, low density polyethylene with thickness of 25 μm
- 4 coated board
- 5 heat seal varnish
- 110 paper cup main body
- 11 barrel portion
- 12 base portion
- 13 rim portion
- 20 cylindrical paper body
- 21 inner curl portion
- 22 curved portion
- 30 insulation space layer diagram
- FIG. 1
- FIG. 2

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(71)出願人 000003193

凸版印刷株式会社

東京都台東区台東1丁目5番1号

(72)発明者 永江 実

東京都台東区台東1丁目5番1号 凸版印刷株式会社内

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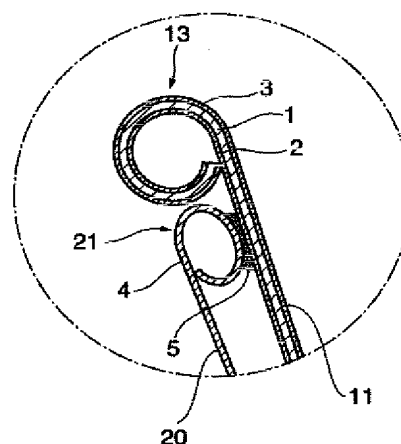
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(54)【発明の名称】 紙製断熱カップとその製造方法

(57)【要約】

【課題】生産効率が高く、かつ、接着性があり、品質の良好な紙カップ本体と紙製筒体とからなる紙製断熱カップとその製造方法を提供すること。

【解決手段】紙カップ本体の胴部11を形成する胴部材は、表裏両面2、3にポリオレフィン系樹脂膜を塗布したポリオレフィン系樹脂加工紙からなり、紙カップ本体胴部11の口縁部13直下の胴部外側面が、紙製筒体内カール部21の外側面とヒートシールニス5を介して接着固定されている。



【特許請求の範囲】

【請求項1】 胴部と底部とからなり、開口部周縁が外側にカールした口縁部を有する紙カップ本体と、紙カップ本体の胴部外側に嵌め込まれ上部周縁に内側にカールした内カール部が形成された紙製筒体とから構成され、紙カップ本体胴部と紙製筒体の間に断熱空間層が形成される紙製断熱カップであって、

紙カップ本体の胴部を形成する胴部材は表裏両面にポリオレフィン系樹脂膜を塗布したポリオレフィン系樹脂加工紙から成り、紙カップ本体胴部の口縁部直下の胴部外側面が、紙製筒体内カール部の外側面とヒートシールニスを介して接着固定されていることを特徴とする紙製断熱カップ。

【請求項2】 紙カップ本体を作製する紙カップ成形工程、
紙製筒体ブランクをスリーブ状に加工し、該スリーブの上部周縁に内側に曲がる内カール部を形成させる内カール部形成工程、
紙カップ本体の口縁部直下の胴部外側面周囲にヒートシールニスを塗布するヒートシールニス塗布工程、
ヒートシールニス塗布部分をホットエアーにより加熱し、ポリオレフィン系樹脂膜を熱融解するホットエアー吹き付け工程、
紙製筒体内に紙カップ本体を嵌め込み、紙カップ本体の胴部外側面と紙製筒体の内カール部外側面とを熱融着により接着固定させる嵌め込み固着工程、
上記各工程からなる請求項1記載の紙製断熱カップの製造方法。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 本発明は、即席麺などを収容する紙製の断熱カップに関し、特に、熱湯を注いでそのまま飲食することが可能ないわゆるインスタント食品やインスタント飲料用の紙製の断熱カップに関する。

【0002】

【従来の技術】 即席麺などの収容物に熱湯を注いで食する紙製断熱カップとして、紙製筒体の上部を内側にカールさせて内カール部を形成させ、紙製筒体と紙カップ本体胴部との間に断熱空間層を設け紙製断熱カップとしたものがある。

【0003】 この場合、紙カップ本体に紙製筒体を被せて一体化させるための紙カップ本体と紙製筒体の接着方法としては、エマルジョン型接着剤を介して接着させる方法や、紙カップ本体胴部の外側面のポリオレフィン系樹脂層を加熱溶融させたところに紙製筒体を被せて接着させる方法などが考えられている。

【0004】 しかしながら、前者の方法は、エマルジョン型接着剤を乾燥させるのに時間がかかるため生産速度が遅い、あるいは紙カップ本体と紙製筒体を接着させるために多くの接着剤を必要とするため接着剤が接着部分

からはみ出す、などの問題がある。

【0005】 また、後者の方法では、コートボール層または、その上に印刷を施した印刷表示層が紙製筒体の外側面となり、この面と紙カップ本体の胴部のポリオレフィン系樹脂層を接着させることになり、コートボール層または印刷表示層とポリオレフィン系樹脂層を接着させることになり、接着の安定性を得ることは難しい。

【0006】

【発明が解決しようとする課題】 本発明は、紙カップ本体に紙製筒体を被せて紙製筒体と紙カップ本体胴部との間に断熱空間層を設けた紙製断熱カップに関する以上のような問題点に着目してなされたもので、生産効率が高く、かつ、接着の安定性があり、品質の良好な紙カップ本体と紙製筒体からなる紙製断熱カップを提供することを目的とする。

【0007】

【課題を解決するための手段】 本発明の請求項1の発明は、胴部と底部とからなり、開口部周縁が外側にカールした口縁部を有する紙カップ本体と、紙カップ本体の胴部外側に嵌め込まれ上部周縁に内側にカールした内カール部が形成された紙製筒体とから構成され、紙カップ本体胴部と紙製筒体の間に断熱空間層が形成される紙製断熱カップであって、紙カップ本体の胴部を形成する胴部材は表裏両面にポリオレフィン系樹脂膜を塗布したポリオレフィン系樹脂加工紙から成り、紙カップ本体胴部の口縁部直下の胴部外側面が、紙製筒体内カール部の外側面とヒートシールニスを介して接着固定されていることを特徴とする紙製断熱カップである。

【0008】 このように、紙カップ本体胴部の口縁部直下の胴部外側面と紙製筒体内カール部の外側面とが、ヒートシールニスを介して接着固定されているので、特別の乾燥工程を必要とせず作業効率が良いし、接着剤が接着部分からはみ出すこともない。また、コートボール層またはその上に印刷を施した印刷表示層とポリオレフィン樹脂膜とが直接、接着することがないので、コートボール層や印刷表示層であっても安定した接着が可能になる。

【0009】 なお、ヒートシールニスは紙カップ本体胴部のしかるべき箇所に塗布しても良いし、紙製筒体の内カール部のしかるべき箇所に塗布しても良いし、紙カップ本体胴部と紙製筒体の内カール部の両方に塗布しも良い。

【0010】 また、請求項2の発明は、紙カップ本体を作製する紙カップ成形工程、紙製筒体ブランクをスリーブ状に加工し、該スリーブの上部周縁に内側に曲がる内カール部を形成させる内カール部形成工程、紙カップ本体の口縁部直下の胴部外側面周囲にヒートシールニスを塗布するヒートシールニス塗布工程、ヒートシールニス塗布部分をホットエアーにより加熱し、ポリオレフィン系樹脂膜を熱融解するホットエアー吹き付け工程、紙製

筒体内に紙カップ本体を嵌め込み、紙カップ本体の胴部外側面と紙製筒体の内カール部外側面とを熱融着により接着固定させる嵌め込み固着工程、上記各工程からなる請求項1記載の紙製断熱カップの製造方法である。

【0011】上記各工程を経て紙製断熱カップを作製することにより、見栄えが良く、断熱性に優れた品質の良いカップとなる。なお、前述の紙製筒体の上部周縁に内側に曲がる内カール部を形成させる内カール部形成工程において、同時にまたは別工程で、該紙製筒体の下部周縁に内方に彎曲した彎曲部を形成させる彎曲部形成工程を設けることで、さらに断熱性を高めることが可能である。

【0012】

【発明の実施の形態】以下実施例により本発明を詳細に説明する。本発明の紙製断熱カップは、例えば図1に示すように、胴部(11)と底部(12)とからなり、開口部周縁が外側にカールした口縁部(13)を有する紙カップ本体(10)と、上部周縁が内側にカールした内カール部(21)を有する紙製筒体(20)から構成され、紙カップ本体(10)の胴部外側に紙製筒体820)が嵌め込まれ、紙カップ本体胴部と紙製筒体の間に断熱空間層(30)が形成されてなるものである。

【0013】紙カップ本体(10)は、胴部(11)を形成する胴部材、底部(12)を形成する底部材とも、坪量が $170\sim 400\text{ g/m}^2$ 程度のカップ原紙の両面または片面にポリプロピレン樹脂、低密度ポリエチレン樹脂などのポリオレフィン系樹脂を $10\sim 50\text{ }\mu\text{m}$ 程度塗布した加工紙を一般的な紙カップ成形機にセットして作製することができる。ここで、胴部を形成する胴部材には、表裏両面にポリオレフィン系樹脂を塗布した加工紙を使用することがこの発明の重要な点である。

【0014】口縁部(13)は、図示はしていないが、上下方向に押しつぶした偏平な口縁部としても良い。

【0015】紙製筒体(20)は、まず、坪量が $190\sim 420\text{ g/m}^2$ 程度のコートボール、白ライナー、カップ原紙等の板紙を素材として、紙カップ本体の胴部を覆う大きさの所定寸法の略扇形に打ち抜き、紙製筒体ブランクを作製する。

【0016】ついで、紙製筒体ブランクの両端を重ね合わせ、例えば、エチレン・酢酸ビニール樹脂系のエマルジョン型接着剤を介して接着させ筒状に加工する。あるいは、紙製筒体ブランクの裏面に低密度ポリエチレン樹脂を塗布して熱により接着させ、筒状に加工しても良い。

【0017】筒状に加工した筒体をインカール金型を使用して加圧およびまたは加熱加圧して筒体の上端を内側にカールさせた内カール部(21)を形成させる。この際、同時にまたは別工程で、絞り金型を用いて加圧または加熱加圧して筒体の下端を内方に彎曲した彎曲部(22)を形成させても良い。

【0018】紙製筒体(20)の紙カップ本体(10)への嵌め込みは、例えばつぎのようにして行う。まず、紙カップ本体の胴部の口縁部の直下の、紙製筒体を嵌め込んだ際に、紙カップ本体の胴部の外側面が紙製筒体の内カール部の外側面と接触する箇所近傍周囲にヒートシールニスを塗布し、ヒートシールニス層(5)を形成させる。

【0019】塗布する方法は、ノズルを使用してヒートシールニスを噴霧する、糊車によりヒートシールニスを転写する、ヒートシールニスをあらかじめ胴部の該当する部分に印刷しておく等、公知の方法を用いれば良い。

【0020】なお、ヒートシールニス層(5)は、紙製筒体の、紙カップ本体に紙製筒体を被せた際、内カール部の紙カップ本体の胴部と接触する箇所に形成させても良い。この場合、紙カップ本体の胴部の上記したヒートシールニスは、塗布しておいても良いし、なくても良い。すなわち、どちらか一方に塗布してあれば良い。

【0021】つぎに、ヒートシールニス層塗布部分を加熱して、表面のポリオレフィン系樹脂膜を溶融する。加熱する方法は、ホットエアーを吹き付ける、高周波加熱をする、放射線熱をするなど、公知の方法を用いれば良い。ヒートシールニスを塗布した直後に加熱することにより、ニスに含有される溶剤を乾燥させると同時に表面のポリオレフィン系樹脂膜を溶融することができる。

【0022】紙カップ本体の胴部の口縁部直下の周囲のポリオレフィン系樹脂膜が溶融しているうちに、紙カップ本体を底の方から紙製筒体の中に嵌め込み、紙製筒体の内カール部(21)の内側面は紙カップ本体の口縁部直下のヒートシールニスを塗布して溶融したポリオレフィン系樹脂膜と接触固定され、紙製筒体の内カール部の内側面と紙カップ本体の胴部の溶融したポリオレフィン系樹脂膜とはヒートシールニス層(5)を介して接着固定される(図2参照)。また、紙製筒体と紙カップ本体の底部との接着においても同様に、ホットエアーを用いてポリオレフィン系樹脂膜を溶融して接着固定しても良い。この際、ヒートシールニス層は設けても、設けなくてもどちらでも構わない。このことにより紙カップ本体の胴部(11)と紙製筒体(20)の間に断熱空間層(30)ができる。

【0023】

【実施例】以下に本発明の実施例をさらに具体的に説明する。

〈実施例1〉まず、胴部を形成する胴部材として坪量 220 g/m^2 のカップ原紙(1)の表面に厚さ $15\text{ }\mu\text{m}$ の低密度ポリエチレン樹脂(2)を、また、裏面に厚さ $25\text{ }\mu\text{m}$ の低密度ポリエチレン樹脂(3)をそれぞれ塗布したポリエチレン加工紙を、また、底部を形成する底部材として坪量 200 g/m^2 のカップ原紙の片面に厚さ $30\text{ }\mu\text{m}$ の低密度ポリエチレン樹脂を塗布したポリエチレン加工紙をそれぞれ準備し、一般的な紙カップ成形

機を使用して、ポリエチレン（ $25\mu\text{m}$ 厚、 $30\mu\text{m}$ ）を内側にした、高さ 105mm 、口径 140mm 、底径 102mm 、口縁部高さ 5mm 、口縁部幅 5mm 、テーパ角度 7.5° の紙カップ本体10を成形した。

【0024】別に、坪量 $270\text{g}/\text{m}^2$ のコートボール（4）を用いて、所定寸法の扇形の紙製筒体ブランクを作製し、この扇形の筒体ブランクの両端を重ね、エチレン・酢酸ビニル樹脂系のエマルジョン型接着剤を介して接着させ、筒状に成形した。

【0025】続いて筒状に成形した筒体ブランクをインカール金型を使用して加熱加圧して上端縁を内側にカールさせた厚さ（幅） 1.5mm の内カール部（21）を形成させた。また、筒状に成形した筒体ブランクの下部は、絞り金型を使用して最大絞り深さ 2.5mm の彎曲部（22）を形成させ、紙製筒体（20）とした。

【0026】先に成形した紙カップ本体の胴部外側の口縁部の下に全周にわたり幅約 5mm のヒートシールニス塗布層（5）をノズルによる噴霧方式により形成した。ヒートシールニスは主成分がポリオレフィン系樹脂からなる溶剤タイプを用いた。

【0027】紙カップ本体胴部のヒートシールニス塗布層（5）を設けた口縁部近傍および紙カップ本体胴部下端部分にそれぞれホットエアーを吹き付け、表面の低密度ポリエチレン層を溶融させた。

【0028】最後に、別に作製しておいた紙製筒体に上記の紙カップ本体を底部の方から嵌め込み、紙製筒体の上端は紙カップ本体の口縁部の下にヒートシールニス層（5）を介して接着固定され、紙製筒体の下端は紙カップ胴部下部に接触固定されて、紙製筒体と紙カップ本体胴部の間に断熱空間層（30）を有する実施例1の紙製断熱カップとした（図1、図2参照）。

【0029】〈実施例2〉紙製筒体の内カール部の、紙カップ本体の胴部外側と接触する箇所にもノズルから噴霧させる方式で約 5mm 幅のヒートシールニス層を設けた以外は実施例1と同様の材料、方法を用いて紙カップ本体の胴部に紙製筒体を被せて実施例2の紙製断熱カップを作製した。

【0030】〈実施例3〉紙カップ本体の胴部外側の、紙製筒体の内カール部と接触する箇所にヒートシールニス塗布層を設けない以外は実施例2と同様の材料、方法を用いて紙カップ本体の胴部に紙製筒体を被せて実施例3の紙製断熱カップを作製した。

【0031】〈比較例1〉紙カップ本体の胴部外側の、紙製筒体の内カール部と接触する箇所にヒートシールニス塗布層を設けない以外は実施例1と同様の材料、方法を用いて紙カップ本体の胴部に紙製筒体を被せて紙製断

熱カップを作製し、比較例1の紙製断熱カップとした。

【0032】〈比較例2〉先ず、紙カップ本体の胴部を形成する胴部材に坪量 $220\text{g}/\text{m}^2$ のカップ原紙の片面に厚さ $25\mu\text{m}$ の低密度ポリエチレン樹脂を塗布したポリエチレン加工紙を、また、底部を形成する底部材として坪量 $200\text{g}/\text{m}^2$ のカップ原紙の片面に厚さ $30\mu\text{m}$ の低密度ポリエチレン樹脂を塗布したポリエチレン加工紙をそれぞれ準備し、一般的な紙カップ成形機を使用して、ポリエチレンを内側にした、実施例1と同じ寸法の紙カップ本体を成形した。

【0033】このカップ本体を使用した以外は実施例1と同じ紙製筒体を使用し、実施例1と同様の方法で紙カップ本体の胴部に紙製筒体を被せて紙製断熱カップを作製し、比較例2の紙製断熱カップとした。

【0034】〈比較例3〉比較例2で使用した紙カップ本体を使用した以外は、実施例2と同様の紙製筒地を使用し、実施例2と同様に紙カップ本体にヒートシールニス層を設け、紙カップ本体の胴部に紙製筒体を被せて紙製断熱カップを作製し、比較例3の紙製断熱カップとした。

【0035】〈比較例4〉比較例2で使用した紙カップ本体を使用した以外は、実施例3と同様の材料、方法を用いて紙製断熱カップを作製し、比較例4の紙製断熱カップとした。

【0036】〈比較例5〉比較例2で使用した紙カップ本体を使用した以外は、比較例1と同様の材料、方法を用いて紙製断熱カップを作製し、比較例5の紙製断熱カップとした。

【0037】このようにして作製した実施例3種類、比較例5種類、合計8種類の紙製断熱カップの紙カップ本体胴部の口縁部直下の胴部外側面と、紙製筒体内カール部の外側面との接着性を下記する方法により観察、評価した。その結果を表1に示す。

紙カップ本体胴部と紙製筒体内カール部との接着性の評価方法；出来上がった紙製断熱カップを破壊して、円周上でどの程度胴部と内カール部が接着しているかを目視により確認。

○；紙カップ本体胴部と紙製筒体内カール部との接触部分が完全に接着している（円周方向に全ての部分が完全に接着している）。

△；紙カップ本体胴部と紙製筒体内カール部との接触部分に一部接着していない部分がある。

×；紙カップ本体胴部と紙製筒体内カール部との接触部分が全く接着していない。

【0038】

【表1】

	胴部と内カール部の接着性
実施例1	○
実施例2	○
実施例3	○
比較例1	△
比較例2	△～×
比較例3	△
比較例4	△～×
比較例5	×

【0039】表1の結果から、紙カップ本体の胴部を形成する胴部材に表裏両面にポリオレフィン系樹脂膜を塗布したポリオレフィン加工紙を使用し、紙カップ本体胴部の内カール部との接触面のポリオレフィン系樹脂膜を加熱熔融し、かつ、紙カップ本体胴部あるいは紙製筒体の内カール部の両方またはいずれか一方にヒートシールニス層を形成させることにより、紙カップ本体の胴部と紙製筒体の内カール部が完全に接着した紙製断熱カップが作製できることが分かる（実施例1～3）。

【0040】

【発明の効果】上記のように本発明によれば、紙カップ本体と紙製筒体との接着性が良くなり、カップの横押し強度（リップ強度）が上がる。また低坪量の紙を使用しても強度を維持することができる。紙製筒体の表面にコート層があっても紙カップ本体と十分に接着するため、美粧印刷が可能になる。従来のエマルジョン型接着剤を使用した場合と比較して生産スピードが向上する。

【図面の簡単な説明】

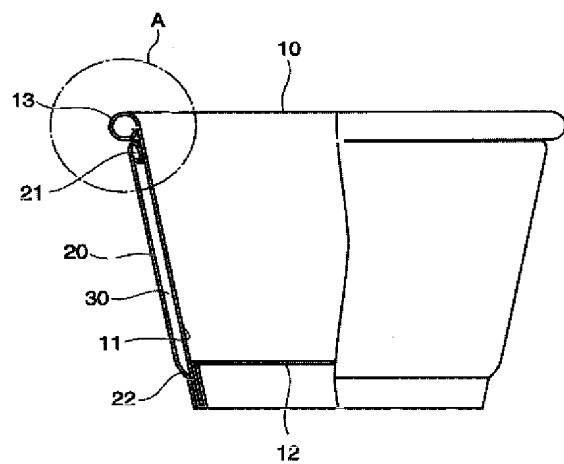
【図1】本発明の紙製断熱カップの一実施例を示す部分断面説明図である。

【図2】図1におけるA部を拡大した断面説明図である。

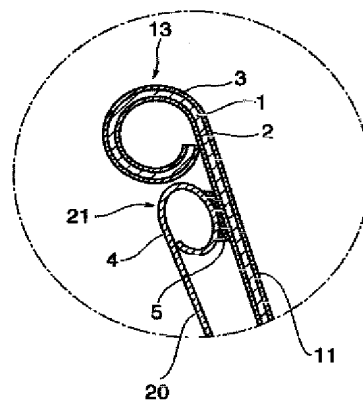
【符号の説明】

- 1・・・カップ原紙
- 2・・・表面、厚さ15 μ mの低密度ポリエチレン
- 3・・・裏面、厚さ25 μ mの低密度ポリエチレン
- 4・・・コートボール
- 5・・・ヒートシールニス
- 110・・・紙カップ本体
- 11・・・胴部
- 12・・・底部
- 13・・・口縁部
- 20・・・紙製筒体
- 21・・・内カール部
- 22・・・彎曲部
- 30・・・断熱空間層

【図1】



【図2】



フロントページの続き

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(参考)

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